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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/072,313	02/07/2002	Nimrod Sarig	6019 USA/MASK/RT/OR	9706

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APPLIED MATERIALS, INC.
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EXAMINER

KIK, PHALLAKA

ART UNIT	PAPER NUMBER
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2825

DATE MAILED: 07/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/072,313

Applicant(s)

SARIG, NIMROD

Examiner

Phallaka Kik

Art Unit

2825

-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-36 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 February 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner. *draftsperson*
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings filed on 2/7/2002 are acceptable subject to correction of the informalities indicated on the attached "Notice of Draftsperson's Patent Drawing Review," PTO-948. In order to avoid abandonment of this application, correction is required in reply to the Office action. The correction will not be held in abeyance.

Information Disclosure Statement

2. The listing of references in the specification is not a proper information disclosure statement (see Applicant's specification, pages 2-4). 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. **Claims 1-13,16-18,23-36** are rejected under 35 U.S.C. 102(b) as being anticipated by **Mahdavi et al.** (US Patent No. 5,345,514).

As per **claims 1,23,27,36**, all of the elements of the claims are illustrated in Figs. 1, 2A and 2B (see also 6, line 42 to col. 8, line 62), wherein the theoretically-symmetrical windows or regions are identified in steps 85 and 91 of Fig. 2B, and analyzed based on the expected symmetry or expected symmetry property (i.e., calculated symmetrical coefficient--col. 6, line 62 to col. 7, line 23) in steps 92-95 of Fig. 2B to determine the defects in steps 96-99 of Fig. 2B, wherein the system, including processor (CPU), storage unit, database, human interface including performing in real time and storing the database in the storage unit is part of the computer system illustrated in Fig. 1 and further described in col. 3, line 9 to col. 4, line 21.

As per **claims 2-6,9-13,28,29**, Fig. 2A further illustrates the further limitations of the claims, wherein scanning and producing object-image(s) from object (including physical object) is done in steps (42, 44,46, 28,50,52), analyzing the database, identifying the at least one data-base image element, and manipulation procedures, including refining procedures of symmetry based optimization (i.e., differencing, filtering, conversion, composing) applied are done in steps (56-84--see col. 4, line 32 to col. 5, line 27), wherein the symmetrical data-base window are further determined (steps 85 and 91 of Fig. 2B).

As per **claims 7-8,30-35**, the determining of the dimensions is illustrated in Fig. 5, from which regions 86, 88, 90 are extracted for image testing (see steps 85 and 91 of Fig. 2B), wherein the further limitations are discussed in the rejection of claims 2-6,9-13,28,29 above.

As per **claims 16-18**, the further symmetry-assessment, including iterative testing are further described in Fig. 2B.

As per **claim 24-26**, the expected symmetry being axial, rotational and a combination of axial and rotational is part of the symmetrical coefficient as described in col. 7, lines 2-21 since opposite sides of vertical and horizontal bisecting lines from which the symmetrical coefficients are calculated would inherently accounts for axial, rotational or a combination of both.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claims 14-15,19-20** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Mahdavi et al.** (US Patent No. 5,345,514) in view of **Levy et al.** (US Patent No. 4,579,455).

As per **claims 14-15, Mahdavi et al.** disclose all of the elements of claim 10, as discussed above, which the respective claims depend. However, **Mahdavi et al.** failed to teach the steps/means for producing the alignment-assessment value for the object-image window according to the alignment -assessment function, as part of the procedure of registering a symmetrical data-base image window. Such alignment-

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assessment steps/means is taught by **Levy et al.** to take into account alignment errors in photographic mask processing (abstract; col. 1, lines 40-50; col. 1, line 62 to col. 3, line 53). It would have been obvious to one of ordinary skilled in the art at the time of the invention to further incorporate alignment-assessment steps/means as taught by **Levy et al.** into the system/method of **Mahdaviéh et al.** because such incorporation would allow the method/system of **Mahdaviéh et al.** to adapt to photographic mask processing by eliminating the errors due to alignment problem while quickly and comprehensively providing the solution for which **Mahdaviéh et al.** was intended.

As per **claims 19-20, Mahdaviéh et al.** disclose all of the elements of claim 2, as discussed above, which the respective claims depend, wherein **Mahdaviéh et al.** further teaches the physical objects can be any conducting objects with complex geometric shape (col. 8, lines 24-49) to detect defects or cracks (col. 7, line 65 to col. 8, line 23) using 2-dimensional pixels image representations (abstract). However, **Mahdaviéh et al.** failed to particular teach the physical object being a photographic mask or reticle. Such photographic mask (or photomask) or reticle being inspected for defects using 2-dimensional pixels image representation is well known in the art and is further taught by **Levy et al.** (col. 16, lines 5-25). It would have been obvious to one of ordinary skilled in the art at the time of the invention to further apply the method/system of **Mahdaviéh et al.** to the physical objects such as photomasks and reticle because such physical objects suffer from defects which are detected using scanned images as taught by **Levy et al.**, for which the method/system of **Mahdaviéh et al.** is intended so as to quickly and comprehensively provide the solution.

7. **Claims 21-22** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Mahdavieh et al.** (US Patent No. 5,345,514) in view of **Ong et al.** ("Acoustic microscopy reveals IC packaging hidden defects", Proceedings of the 1997 1st Electronic Packaging Technology Conference, 08 October 1997, pp. 297-303).

As per **claims 19-20**, **Mahdavieh et al.** disclose all of the elements of claim 2, as discussed above, which the respective claims depend, wherein **Mahdavieh et al.** further teaches the physical objects can be any conducting objects with complex geometric shapes (col. 8, lines 24-49) to detect defects or cracks in the material (col. 7, line 65 to col. 8, line 23). However, **Mahdavieh et al.** failed to particular teach the physical object being a printed material, or a fabricated material. **Ong et al.** teach the method for detecting of defects due to cracks being applied to printed or fabricated materials (i.e., IC packaging) based on the scanned images produced (see abstract; pages 297-299). It would have been obvious to one of ordinary skilled in the art at the time of the invention to further apply the method/system of **Mahdavieh et al.** to detect defects in physical objects such as in a printed material or fabricated material because such physical objects suffer from similar defects (i.e., cracks) which are detected using scanned images as taught by **Ong et al.**, for which the method/system of **Mahdavieh et al.** is intended so as to quickly and comprehensively provide the solution.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Therefore, Applicant is requested herein to consider them carefully in response to this Office Action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phallaka Kik whose telephone number is 703-306-3039. The examiner can normally be reached on Flexitime.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew S. Smith can be reached on 703-308-1323. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1782.

Any response to this action should be mailed to:

Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

or faxed to:

703-872-9318 (for Before-Final) and 703-872-9319 (for After-Final) for formal communications intended for entry,

Or:

(703) 746-4111 (for informal or draft communications, please label "PROPOSED" or "DRAFT" and let the examiner know prior to faxing)

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Hand-delivered responses should be brought to Crystal Plaza 4, 2201 South Clark Place, Arlington, VA 22202, Fourth Floor (Receptionist).

10. **Applicant should note that effective May 1, 2003, the United States Patent and Trademark Office has a new Commissioner for Patents address for transitioning to the new Office location in Alexandria, VA, wherein correspondence in patent-related matters to organizations reporting to the Commissioner for Patents must now be addressed to:**

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

PK 
July 12, 2003



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